Avionic for Low Altitude High Density SUAS - Dynamic Configurable Dual ADS-B with Interrogation, Phase I Project

SBIR/STTR Programs | Space Technology Mission Directorate (STMD)

ABSTRACT

Avionic for Low Altitude High Density SUAS • Dynamic Configurable Dual ADS-B with Interrogation Flight Safety in the NAS consists of multiple layers • Flight Planning, routing, Radar coverage, transponder coverage, and Dual band ADS-B are examples. This proposal will focus on optimization of the existing active RF Dual band ADS-B and transponder system for use with anticipated large numbers of SUAS. SUAS will often be operating in areas and at altitudes that will not be visible to the existing FAA infrastructure. They will also have much higher densities of aircraft than the current infrastructure can handle. This Proposal will investigate the use of very small software defined transceiver technology (under 1 oz) tri-band avionics that include the ability to receive full UAT including ADS-B, ES ADS-B, and Mode A,C, and S transponder responses that can keep track of all transmitting aircraft. The SUAS will also transmit low power UAT ADS-B with dynamically configurable time slots allowing very high density of SUAS. Included will also be the use of a low power •all call• interrogator when the operational area is not already interrogated by a local source.

ANTICIPATED BENEFITS

To NASA funded missions:

Potential NASA Commercial Applications: Small High performance low CSWaP (Cost, Size, Weight and Power) Avionic systems suitable for use on SUAS will also be useful for manned aircraft and space platforms. The performance evaluation of the avionic approaches can be applied to any type of flight vehicle or ground station and used to help determine optimum avionic packages for them.

To the commercial space industry:

Potential Non-NASA Commercial Applications: The performance of small CSWaP (Cost, Size, Weight and Power) avionic

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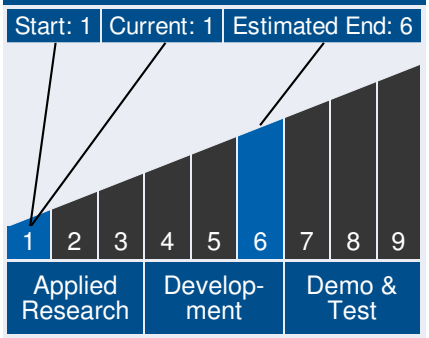
Technology Maturity



Management Team

Program Executives:

- Joseph Grant
- Laguduva Kubendran

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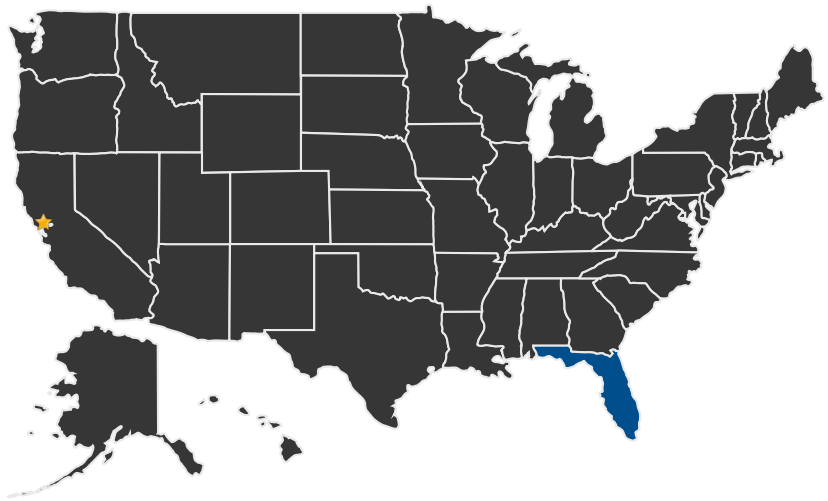
systems has applications to all air and ground vehicles for commercial and military uses. Full situational awareness with the use of properly configured avionic packages is a universal need for all vehicles, manned and unmanned.

U.S. WORK LOCATIONS AND KEY PARTNERS



U.S. States With Work

Lead Center:
Ames Research Center

Other Organizations Performing Work:

- R Cubed Engineering, LLC (Palmetto, FL)

PROJECT LIBRARY

Presentations

- Briefing Chart
  - (http://techport.nasa.gov:80/file/23456)

Management Team *(cont.)*

Program Manager:
- Carlos Torrez

Principal Investigator:
- Vincent Contarino

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IMAGE GALLERY

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DETAILS FOR TECHNOLOGY 1

Technology Title

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Potential Applications

Small High performance low CSWaP (Cost, Size, Weight and Power) Avionic systems suitable for use on SUAS will also be useful for manned aircraft and space platforms. The performance evaluation of the avionic approaches can be applied to any type of flight vehicle or ground station and used to help determine optimum avionic packages for them.